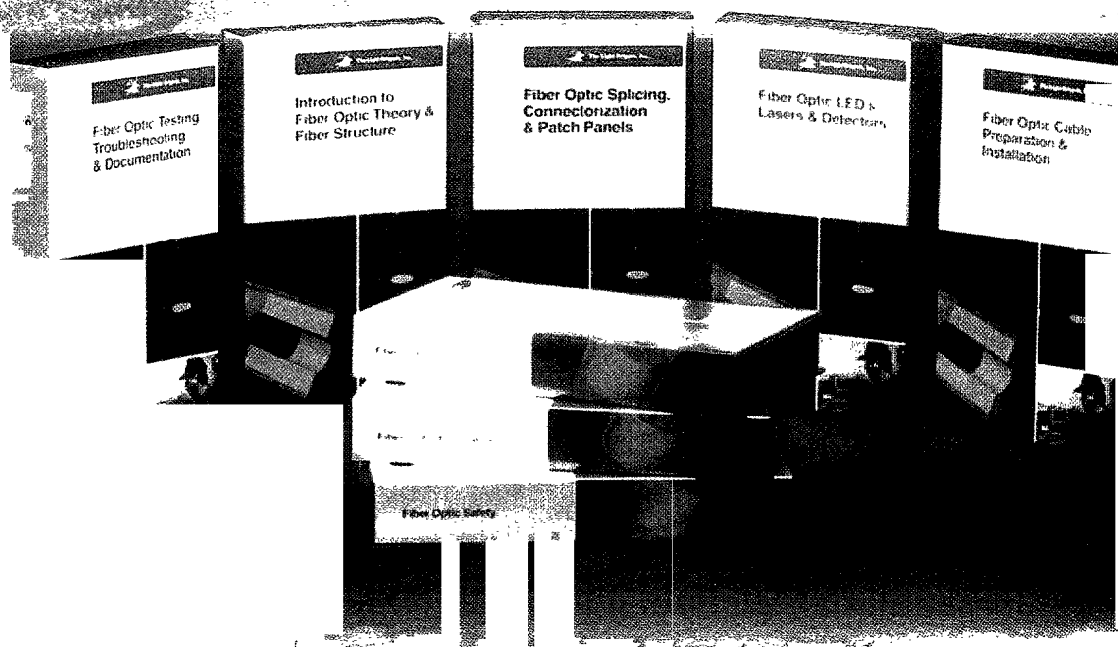


# Fiber Optic Training Videos

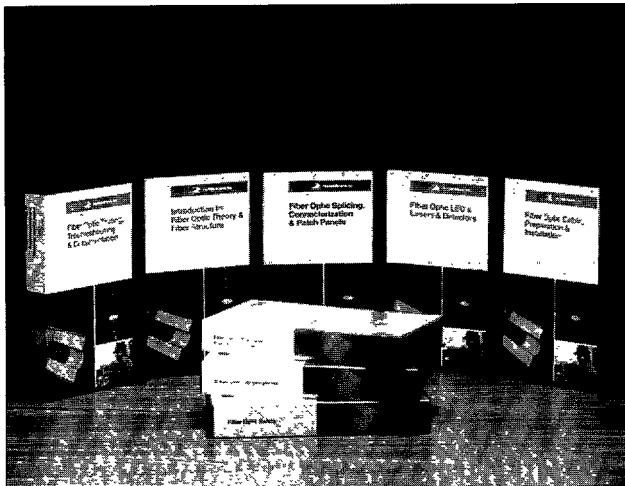


## FEATURES

- *High Quality Format*
- *Color Graphics*
- *Current Technology*
- *NTSC, PAL or SECAM formats*
- *Actual Application Footage*
- *Video Courses*

## TARGET AUDIENCE

- *Instructors*
- *Engineers*
- *Video Library*
- *Technicians*
- *Quality Control*
- *Consultants*
- *Technical Sales*
- *Managers*

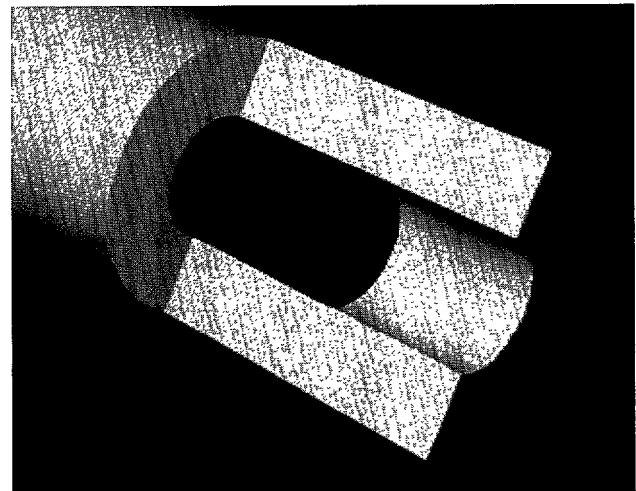


## INTRODUCTION TO FIBER OPTIC THEORY & FIBER STRUCTURE

The first in the series of videos, the introduction video covers optical theory and its relationship to optical fibers.

For many users of fiber optics, fiber optic theory is the most difficult aspect to learn and understand. This video covers the relationship of light and optical fibers. Optical issues such as reflection, refraction, and wavelength are covered along with fiber types and structures such as singlemode, multimode, core, cladding, and coatings.

The generous use of both graphics and actual footage of fiber production, installations and applications allow the viewer to easily understand this dynamic technology.



- History
- Fiber Manufacturing
- Optical Theory
  - Refraction, Reflection, Wavelength, Attenuation, Numerical Aperture
- Fiber Types & Structures
- Dispersion (Modal and Chromatic)
- Cutoff Wavelength
- Comparison
- Advantages

*Video length: 24 minutes*

*P/N: W-4LB*

## FIBER OPTIC CABLE AND CABLE PREPARATION

Optical cables provide the physical protection for optical fiber transmission of voice, video and data networks. Selecting the correct cable structure for a particular installation and network design is critical for today's users. Choosing the correct design can save money as well as meeting the codes required per state and national standards.

This video reviews the cable types, structures, related building codes and specifications along with a section on the proper techniques, tools and methods to prepare the cable for use with splicing and connectorization.



- Cable Manufacturing
- Cable Structures
- Indoor and Outdoor Cable Types
- Cable Jackets and Applications
- Specialty Cables
- Building and Installation Codes
- Cable Preparation
  - Loose Tube Cable
  - Breakout Cable
  - Distribution Cable
  - Fan Out Kits
  - Breakout Kits

*Video length: 33 minutes*

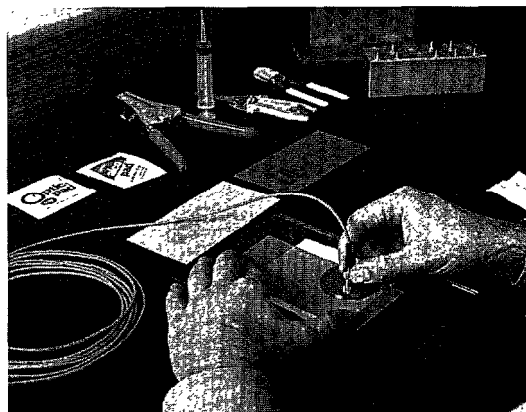
PIN: w-4LC

## FIBER OPTIC CONNECTORS, CONNECTORIZATION AND PATCH PANELS

There are many connectors, vendors, bonding techniques and system specifications involving fiber optic connectors. This video reviews these topics and instructs the viewers on the basics of connector design, termination, styles and applications which users must confront.

This video reviews the ten common connector styles, the four basic bonding techniques and the differences between multimode and singlemode applications and polishes. The video demonstrates different types of connector assemblies, proper use of tools, inspection equipment and testing basics. Learn techniques to improve performance and productivity.

Also featured is a section on the family of patch panel products used for interconnecting transmission equipment with jumpers and pigtails. Panel types, designs, cable routing and connector related issues are examined.



- Connector Types
- Bonding Techniques
- End Finishes
- Termination
- Visual Inspection
- Basic Testing
- Jumpers & Pigtails
- Patch Panels

Types  
Applications

- Attenuators
- EIA/ TIA 568A Issues

*Video length: 27 minutes*

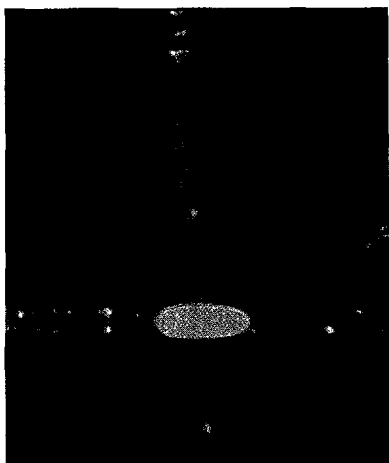
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## FIBER OPTIC SPLICING AND SPLICECLOSURES

Proper installation of optical splices, both mechanical and fusion, is critical for optical communication systems. This video reviews the types of mechanical splices and fusion splicers available, how they work and their applications. Related tools, hardware and installation issues are covered to allow for the proper background in understanding and using splicing products.

Examples of splice closures, splice trays and associated hardware are reviewed and demonstrated. Incorporating actual installation footage with graphics and simulations, the techniques, tools and applications are presented.

If you need to learn about the various types of products, applications and installation techniques, this video will assist you in your design and installation process.



- Fusion Splicers (Manual, LID and PAS)
- Fusion Splicing
- Maintenance and Operation Issues
- Mechanical Splices (UV, Mechanical & Reusable)
- Splice Tools
  - Preparation
  - Cleaning
  - Cleaving
- What Causes Splice Losses?
- The Splicing Environment
- Closures
  - Applications
  - Types
  - Environmental Protection

Video length: 22 minutes

PIN: W-4LS

## FIBER OPTIC TESTING, TROUBLESHOOTING AND DOCUMENTATION

The need to provide quality control for today's communications systems requires complete testing of optical components from conception to installation and operation.

Today a variety of test equipment is available to meet the needs of today's communication systems for LAN's, WAN's and MAN's. These and other applications require an understanding of the types of test equipment, their applications and operations. This video reviews the equipment and highlights specific applications and techniques to educate and enhance user skills.

Maintenance and restoration applications require an understanding of the equipment, its application and the various standards, procedures and documentation requirements. The video closes with an emphasis on these topics allowing maintenance staff to select the correct products and techniques to meet their applications.



### Types of Test Equipment

- OTDR's
  - Main Frame
  - Mini
  - PC
  - Fault Finders
- Light Sources & Power Meters
- Talk Sets
- Variable Attenuators
- Visual Tracers
- Microscopes
- Reflectometers
- The Roles of Test Equipment and Their Operation
- Acceptance Testing
- Span Testing
- Maintenance
- Restoration
- Test Documentation
- Restoration Strategies
- Restoration Kits
- Faults & Location Techniques

Video length: 37 minutes

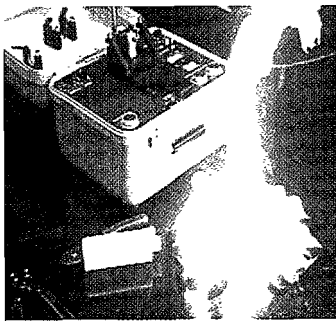
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## FIBER OPTIC SAFETY

A must for those working with fiber optics and related optical technologies. This video covers safety issues for field and lab applications.

Learn about proper fiber handling, disposal and working safely with lasers and chemicals. Safety in the field is covered addressing installation issues such as confined spaces, protective clothing, and right-to-know laws.

The video gives users a tool to use for internal safety programs. Examples of good safety practices, standards and areas of concern are presented for education of management and craft personnel.



- Safety in the Work Area
- Safe Handling of Optical Fibers
- Safe Disposal of Optical Fibers
- Laser Safety
- Ultraviolet Light
- Chemicals and Right-to-Know Laws
- Safety Standards
- Protective Clothing & Eyewear
- Safety in Installations
- Confined Spaces
- High Voltage
- Safety Tools

*Video length: 25 minutes*

*PIN: W-4LJ*

## FIBER OPTIC APPLICATIONS

Worldwide communication requirements are growing at an amazing rate. Fiber optics is key to this growth. The future networks will handle multimedia technologies. This video provides an overview of where and how fiber optics is being used in communication systems to meet the changing requirements of voice, video, and data communications.

Fiber optic technology allows communications to be used in applications where limitations have before limited or stifled growth.



- Fiber Optic's Role in a Communications World
- New Trends in Communications
  - Telecommuting, Teleconferencing,
  - Video Conferencing, Security,
  - Smart Homes
- Communications
  - LANs, WANs, MANs, Voice: T-Carrier,
  - SONET, Fiber to the Curb
- Video
  - CCTV, Broadcast, HDTV, CAD, Imaging
- Data
  - LANs, Ethernet, Token Ring, IEEE 802.3,
  - IEEE 802.5, FDDI, ATM, SMDS
- Sensing/ Sensors
- Medical
- Entertainment
  - Illumination, Lasers
- Audio
- Virtual Reality

*Video length: 43 minutes*

*PIN: W-4LF*

## FIBER OPTIC LEDs, LASERS AND DETECTORS

An understanding of active components used in the transmitters and receivers to convert an electrical circuit to an optical circuit.

As the need for faster devices to operate with wider dynamic ranges in today's transmission equipment increases, the continuing changes in components will progress.

Issues such as components and their operation, wavelength compatibility as well as cost issues, packaging and industry trends are addressed. New technologies such as tunable lasers and optical amplifiers are also reviewed.



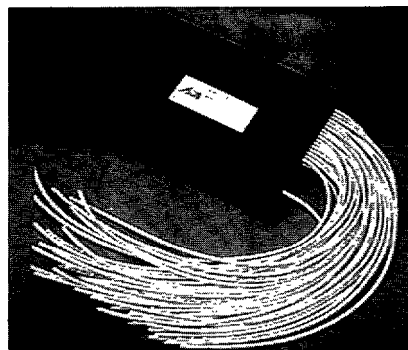
- Types
- Functions
- How They Work
- Applications
- Operating Issues
- Analog & Digital Issues
- LEDs
  - Edge & Surface Emitters
- Lasers
  - Fabrey-Perot, DFB, Tunable, Amplifiers
  - Classifications
  - Safety
- Detectors
  - APDs, PINs, PIN-FETS, Hybrids
  - Materials
  - Issues
- Transceivers
  - Packages
  - Designs
  - Standards
- Modules & Transmitters
- System Performance Budgets

Video length: 35 minutes  
PIN: W-4LG

## FIBER OPTIC COUPLERS, SWITCHES AND ISOLATORS

New products and technologies will continue to drive the applications and versatility of fiber optics. These products are reviewed with examples of how they are used today and how they might be used in the future.

Coupler technology allows users to access, tap, monitor and work with light in more cost effective methods than standard point-to-point physical topologies. Optical switches allow for self-healing networks and rerouting of systems for greater reliability. Isolators will be required to reduce reflections and noise in systems.



- Issues
- Introduction
- What Are They?
- How Do They Work?
- Applications
- Couplers
  - Splitters
  - Wavelength Division Multiplexers
  - Bi-Directional Couplers
  - Star Couplers
- Switches
  - Applications
  - Types
  - Loss Issues
  - Methods
  - Issues
- Isolators
  - Applications
  - Functions

Video length: 29 minutes  
PIN: W-4LH

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## LASERS AS A TOOL

A special production video used at the Conference for Laser Electra-Optics, this video features all the types of Lasers and their applications.

Semiconductor, solid state, gas, excimer and optical amplifiers are reviewed along with how they work and their applications.

An excellent introductory learning tool for schools, the video features lasers used for fiber optic communications, manufacturing, machining, detection, quality control as a measurement tool, medical, research, entertainment and laser fusion applications.

*Video length: 21 minutes*

PIN: W-4LA

## PLASTIC OPTICAL FIBER

Plastic Optical Fiber (POF) technology has grown tremendously through the last several years. Once used only for illumination applications, this industry now offers higher bandwidth fibers for voice, video and data requirements as well.

Its natural immunity from RFI / EM1 has allowed the use of POF in factory industrial controls, signalling systems as well as its flexibility for lighting and illumination applications.

This video show how POF works, its applications and potential applications on the growth of this amazing technology.

- POF Fibers
- POF Fiber Theory
- Advantages
- Handling and Preparation
- Applications of POF
  - Automotive
  - Lighting
  - Signs
  - Communications
  - Isolation
  - Education
- POF Future Trends

*Video length: 20 minutes*

PIN: W-4LK

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## ORDERING INFORMATION

### FIBER OPTIC TRAINING VIDEOTAPES

- |       |   |
|-------|---|
| W-4LA | Lasers as a Tool  |
| W-4LB | Introduction to Fiber Optic Theory and Fiber Structure    |
| w-4LC | Fiber Optic Cable and Cable Preparation                   |
| W-4LD | Fiber Optic Connectors, Connectorization and Patch Panels |
| W-4LE | Fiber Optic Testing, Troubleshooting and Documentation    |
| W-4LF | Fiber Optic Applications                                  |
| W-4LG | Fiber Optic LEDs, Lasers and Detectors                    |
| W-4LH | Fiber Optic Couplers, Switches and Isolators              |
| w-4LI | Fiber Optic Installation                                  |
| W-4LJ | Fiber Optic Safety  |
| W-4LK | Plastic Optical Fiber                                     |
| W-4LN | Fiber Optic System Design                                 |
| W-4LS | Fiber Optic Splicing and Splice Closures                  |

### FIBER OPTIC AUDIO TAPES

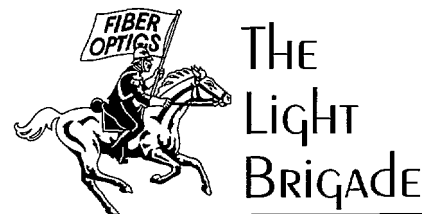
The complete series of videotapes is also available on audio cassettes. Audio tapes are the same length as the videotapes. For audio tape, replace "4" with "5" to order.

Example: W-5LB

### PAL OR SECAM VERSION VIDEOTAPES

For PAL or SECAM videotapes, add PAL or SECAM to the end of the part number.

Example: W-4LB-PAL



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## FIBER OPTIC INSTALLATION

Whether your installation is for short distance campus environments, long distance underground, aerial placement or specialized installations such as submarine, air blown fiber or pressurized cable, the use of fiber optic cable requires proper techniques for a successful installation.

Today's installers and designers must address building codes and standards, environmental issues, proper design, routing, and equipment for installations involving fiber optic cable. Topologies, applications and reliability concerns must be addressed. This video covers these issues and many more involving the proper placement of optical communication systems for LAN's, WAN's and MAN's.

### - Indoor Cable Installations

- Campus
- Plenum/Risers
- Pulling of Cable
- Cable Trays / Raceways
- Conduits
- Air Blown Fiber (ABF)

### - Outdoor Cable Installations

- Direct Buried
- Trench Installations
- Boring
- Pressurized Cable
- Vaults, Manholes and Handholes

### ● Aerial Installations

- OPGW
- ADSS
- Lashing
- Aerial Ducts
- Figure Eight



### - Special Issues

- Building Codes
- Installation Standards
- Grounding/Bonding
- Firewalls
- Cable Markings
- Slack Points
- Routing

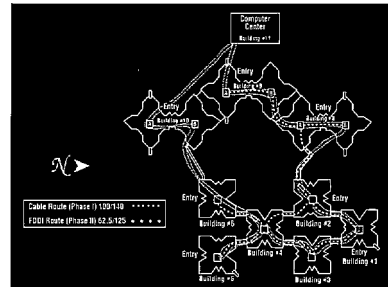
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PIN: W-4LI

## FIBER OPTIC SYSTEM DESIGN

Today's communication users and designers are faced with a large variety of issues in the proper design of an optical system. From topology to network performance, reliability is of paramount importance.

This video focuses on the issues which designers must address for the proper design of local, metropolitan and wide area networks. From physical layout and calculating loss budgets for both multimode and singlemode networks, this video provides the viewer a visual insight into the proper design of optical fiber communication systems for voice, video and data communications.



### - Local Area Networks (LAN's)

- Topologies
- Fiber Selection
- Connector Selection
- Routing Issues
- Hubs, Patch Panels and Media Outlets
- System Issues
- System Loss Budgets
- Fiber Backbones
- Fiber to the Desk

### - Wide Area & Metropolitan Area Networks

- Topologies
- Fiber Selection
- Connector and Splice Issues
- Closures, and Distribution Panels
- Manholes, Handholes and Vaults
- Route Redundancy Issues
- System Loss Budgets
- Restoration Planning Through Design
- Fiber to the Curb
- Future Flexibility
- System Issues

Video length: 34 minutes

PIN: W-4LN